CELL INSTRUMENTS

Material Testing Solutions

LT-03
Leak Tester

Automatic and User-Friendly

Precision Leak Detection for Packaging Integrity

The vacuum leak test the optimal choice for easy, reliable, and non-destructive leak detection across a wide range of packaging types, including bags, sachets, bottles, cans, syringes, pouches, trays, and rigid/flexible containers.

A combination of Bubble Emmission, Empty Chamber Test Method and Methylene Blue Dye Ingress Method.

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Decades of Innovation in Material Testing

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Applications

LT-03 Leak Tester is used to evaluate the integrity of package seals. Ensuring proper seal integrity is essential for:

- Maintaining product quality and safety
- Verifying protective performance
- Evaluating sustainable or cost-efficient packaging materials
- Monitoring sealing process variations

Industries Served: (Not limited to)

- Food packaging (MAP, vacuum-sealed)
- Pharmaceutical containers
- Cosmetic packaging
- Medical device packs
- Industrial materials...

Testing Principle

The test sample is placed in a sealed, water-filled chamber. A vacuum is applied via the control unit. If leaks are present, pressure differences cause trapped air to escape as bubbles—visually indicating failure. Leakage can be observed as a continuous stream of bubbles emitted from the leak site.

Visual Method: Bubble Emission

Test Type: Non-destructive or destructive, depending on application

LT-03 Also Works for

Empty Chamber Test Method (for Liquid-Filled Samples)

A variant method where liquid-filled packages (e.g., bottles, IV bags) are placed in an empty vacuum chamber, i.e. without water filled. A vacuum is applied, and leaks are inferred by visual observation of liquid escaping from the package (similar to a bubble test).

Methylene Blue Dye Ingress Method

A destructive, manual leak detection method where packages are submerged in a methylene blue dye solution under vacuum. Leaks are identified by dye ingress into the package.

Features and Benefits

- **PLC-Controlled Operation with HMI Touchscreen** Ensures precise, industrial-grade testing with a direct user interface for easy operation and parameters.
- **High-Efficiency Venturi Vacuum System (Up to -90 kPa*)** Delivers reliable vacuum generation without an external pump, ideal for clean, maintenance-friendly lab.
- **Visual Leak Detection with Cumulative Test Count** Enables easy observation of samples during testing and logs completed tests for traceability.
- **Save & Retrieve up to 5 Test Parameter Groups** Increases efficiency by storing frequently used vacuum and timing parameters for fast, repeatable setups.
- **Durable Transparent Chamber with Custom Options** Allows full visibility of the test process while offering flexibility in chamber size and shapes.
- **Multi-Unit Display and Auto Conversion** Supports global use by displaying pressure in multiple units (kPa, mbar, psi, etc.) with automatic conversion.
- **Real-Time Pressure Curve Display** Offers live visualization of the vacuum curve.
- **Optional Micro-Printer for Sample Identification** Facilitates immediate printout of test parameters for recordkeeping.
- **Optional Multi-Language/Local Interface** Enhances usability for international teams by supporting local language displays.
- **Optional High-Performance Vacuum Pump Configuration** Available for applications requiring higher vacuum strength or faster evacuation.

Specifications

Test Range*	0 ~ -90 KPa
Test Chamber	Acrylic Cylinder
Test Space	Φ270 x H210 mm (customizable)
Compressed Air	0.7 MPa (prepared by user)
Gas Port Size	φ6 mm
Power	AC 110~220V 50/60Hz

*-90Kpa is available when altitude is less than 100m.

Available Chambers

- Cylinder shapes: Φ270, Φ364, Φ464, Φ614 mm internal diameters and required heights
- Cuboid shapes: Various L x W x H sizes
- Long/large-diameter and wide sample chambers available

Standards

ASTM D3078,ASTM D4991, ISO 11607, USP 1207, GB/T 15171

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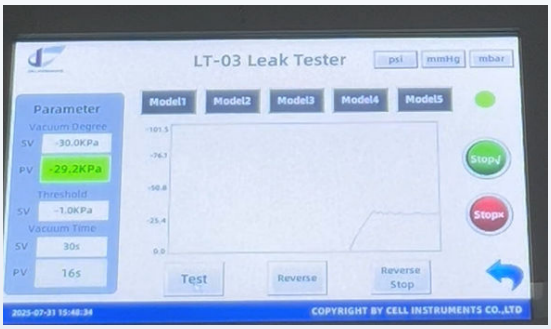
Various Leak Test Methods and Models

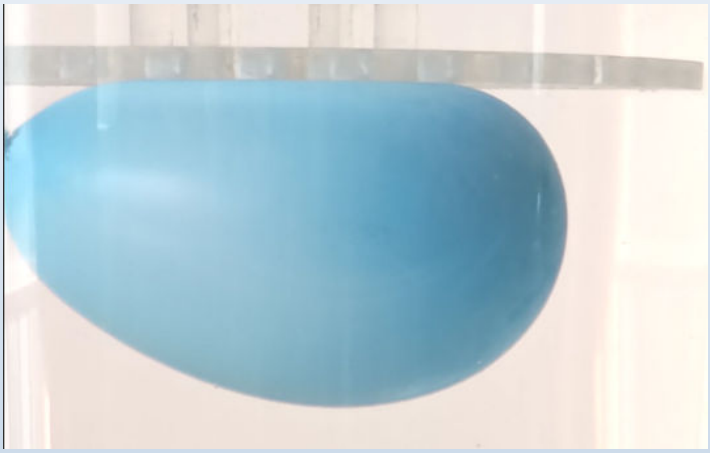
ASTM Standard	Test Type	Common Application	Our Models
D3078	Bubble Emission	MAP, gas-filled, liquid-filled packages	LT-01, LT-02, LT-03
D4991	Bubble Emission	Empty rigid containers	Modified LT-01, LT-02, LT-03
F2096	Pressurization	Gross leak testing	GLT-01
F2338	Vacuum Decay	Flexible and rigid containers	MLT-01
F2054 / F1140	Pressure Decay	Pouches, tubes, blister packs	LSST-01

Liquid Filled Sample in Empty Chamber



Test Curve Display

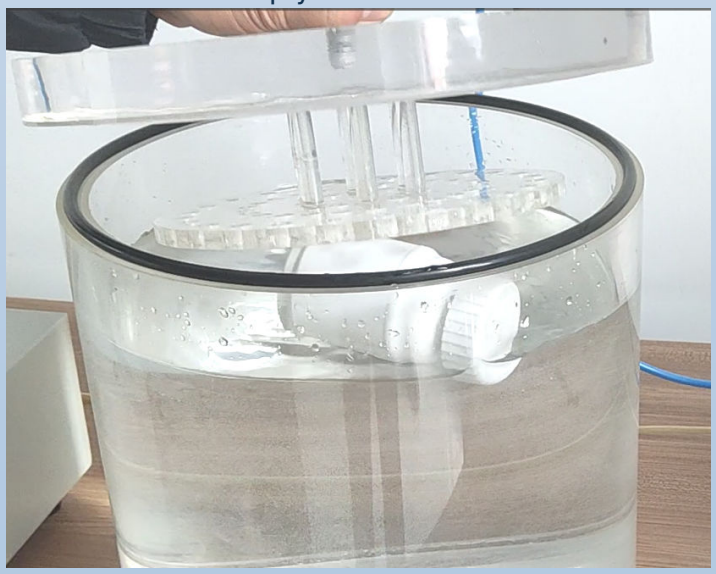
Empty Chamber Test



Sample Inflation During the Test

Long&Large Diameter Chamber

Cuboid Chamber



Placing Sample

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